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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,142	04/11/2005	Katrin Zschintzsch	CEDE 2139	5075

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ST LOUIS, MO 63102

EXAMINER

WONG, EDNA

ART UNIT	PAPER NUMBER
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1795

NOTIFICATION DATE	DELIVERY MODE
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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/531,142	Applicant(s) ZSCHINTZSCH ET AL.	
	Examiner Edna Wong	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 30-34,36-38,40-51 and 53-74 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 30-34,36-38,40-51 and 53-74 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

This is in response to the Amendment dated December 5, 2007. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office Action.

Response to Arguments

Double Patenting

Claims **30-34, 36-38, 40-51 and 53-62** have been provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-27 of copending Application No. 11/105,947 (Zschintzsch et al.).

The rejection of claims 30-34, 36-38, 40-51 and 53-62 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-27 of copending Application No. 11/105,947 (Zschintzsch et al.) is as applied in the Office Action dated December 11, 2006 and July 5, 2007 and incorporated herein. The rejection has been maintained for the following reasons:

The provisional double patenting rejection is not the only rejection remaining in at least one of the applications (MPEP § 804).

Specification

The disclosure has been objected to because of minor informalities.

The objection to the disclosure has been withdrawn.

Claim Rejections - 35 USC § 103

Method

I. Claims **30-34, 36-38 and 56-60** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **WO 02/24979** ('979) and **Dietterle et al.** (US Patent No. 7,179,362 B2) in combination with **Tsuji et al.** (US Patent No. 6,607,653 B1).

The rejection of claims 30-34, 36-38 and 56-60 under 35 U.S.C. 103(a) as being unpatentable over WO 02/24979 ('979) and Dietterle et al. in combination with Tsuji et al. is as applied in the Office Action dated July 5, 2007 and incorporated herein. The rejection has been maintained for the following reasons:

Applicants state that Despite the broad defensive reference to 0.1 to 99.9% Cu, one skilled in the art viewing the reference as a whole would immediately understand that it relates to tin-rich solder alloys for use in electronics.

In response, although the Applicants have a different reason for, or advantage resulting from doing what the prior art relied upon has suggested, Dietterle teaches the method as presently claimed because:

(a) Dietterle teaches that the tin (II) salts are present in the electrolyte particularly preferred in an amount of **10 to 100 g/l** electrolyte, calculated as tin (II) [col. 4, lines 62-64]. Applicants claim that tin methanesulfonate is present in the electrolyte in an amount of from **about 5 to about 195 g/l** of electrolyte (present claims 37/30).

(b) Dietterle teaches that the copper (II) salts are present in the electrolyte

particularly preferred in an amount of **0.1 to 20 g/l** electrolyte, calculated as copper (II) [col. 5, lines 4-6]. Applicants claim that copper methanesulfonate is present in the electrolyte in an amount of from **about 8 to about 280 g/l** of electrolyte (present claims 38/30).

The particularly preferred amounts of tin (II) salts and copper (II) salts in the electrolyte disclosed by Dietterle would have encompassed a ratio of tin ion concentration to copper ion concentration sufficient to electrolytically deposit a bronze having a copper content of greater than about 60% because if the composition is physically the same as presently claimed, it must have the same properties. Products of identical chemical composition can not have mutually exclusive properties. A chemical composition and its properties are inseparable (MPEP § 2112.01(II)).

Applicants state that one skilled in the art would not read the disclosure as teaching the formulation of alloys with any and all possible copper contents whatsoever, i.e., 0.1 to 99.9% copper, because an alloy with, e.g., 70% copper behaves so fundamentally distinct from an alloy with, e.g., 10% copper.

In response, one having ordinary skill in the art would read the disclosure as teaching the formulation of alloys with any possible copper contents as presently claimed because:

the method of using tin methanesulfonate is present in the electrolyte in an amount of from **about 5 to about 195 g/l** of electrolyte (as recited in present claims

37/30) and copper methanesulfonate is present in the electrolyte in an amount of from ***about 8 to about 280 g/l*** of electrolyte (as recited in present claims 38/30) would have been obvious because Dietterle teaches particularly preferred amounts of ***10 to 100 g/l*** of tin (II) salts and ***0.1 to 20 g/l*** of copper (II) salts. Dietterle's salt ranges overlap with Applicants' claimed salt ranges and *are disclosed as particularly preferred amounts*.

A prior art reference must be considered in its entirety, i.e., as a *whole*, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. Denied*, 469 U.S. 851 (1984). In addition, a known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use, see *In re Gurley*, 27 F.3d 551, 554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994). Further, a reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art, including nonpreferred embodiments, see *Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), *cert. denied*, 493 U.S. 975 (1989). See MPEP § 2141.02, MPEP § 2145X.D.1 and MPEP § 2123.

Applicants state that Tsuji et al. also disclose a preference for low copper amounts at Col. 8, lines 56-60.

In response, the Examiner is not relying on Tsuji et al. for the teaching of the copper amounts, but for the teaching of the addition of an aromatic, nonionic wetting

agent to the electrolyte.

The rejection is not overcome by pointing out that one reference does not contain a particular limitation when reliance for that teaching is on another reference. *In re Lyons* 150 USPQ 741 (CCPA 1966). Moreover, it is well settled that one cannot show nonobviousness by attacking the references individually where, as here, the rejection is based on a combination of references. *In re Keller* 208 USPQ 871 (CCPA 1981); *In re Young* 159 USPQ 725 (CCPA 1968).

Applicants state that the Office makes this assertion despite the lack of any disclosure in either reference of a method or example showing the deposition of a copper-rich bronze from a composition further comprising the required electrolyte components.

In response, Dietterle teaches a composition further comprising the required electrolyte components.

The method of using tin methanesulfonate is present in the electrolyte in an amount of from **about 5 to about 195 g/l** of electrolyte (as recited in present claims 37/30) and copper methanesulfonate is present in the electrolyte in an amount of from **about 8 to about 280 g/l** of electrolyte (as recited in present claims 38/30) would have been obvious because Dietterle teaches particularly preferred amounts of **10 to 100 g/l** of tin (II) salts and **0.1 to 20 g/l** of copper (II) salts. Dietterle's salt ranges overlap with Applicants' claimed salt ranges and are disclosed as particularly preferred amounts.

Thus, Dietterle would have been a reference of a method showing the deposition of tin-copper alloys from a composition further comprising the required electrolyte components.

Applicants state that in this case, the *prima facie* case of obviousness is legally deficient since (1) the disclosed prior art range is so universally broad that the range is not sufficient to establish a *prima facie* case under the relevant case law, and (2) the Office can articulate no reason why the ordinarily skilled person would have, based on the disclosures of the combined references, attempted to modify the methods therein to deposit a copper-rich bronze.

In response,

As to (1), since Dietterle would have been a reference of a method showing the deposition of tin-copper alloys from a composition further comprising the required electrolyte components, the method disclosed by Dietterle would have been **sufficient** to electrolytically deposit a bronze having a copper content of greater than about 60%, unless shown otherwise.

As to (2), if the composition comprising the particularly preferred amounts of tin (II) salts and copper (II) salts disclosed by Dietterle would have been **sufficient** to electrolytically deposit a bronze having a copper content of greater than about 60%, then one having ordinary skill in the art would have attempted to modify the methods therein to deposit a copper-rich bronze by proportional balancing to achieve desired

results in the formation of an alloy as taught by Dietterle(col. 5, lines 56-60).

Applicants state that the analysis therein requires the Office to consider whether Dietterle et al.'s disclosure of a universe-wide copper content would have provided a reason to select a copper content greater than 60%. The questions to consider in order:

II.A.4.a. Is genus so small that each member is inherently disclosed?

II.A.4.b. Are there express teachings that would have motivated the selection?

II.A.4.c. Is there a teaching of structure similarity?

II.A.4.f. Is there any other teaching to support the selection of the species or subgenus?

In response,

As to II.A.4.a., the particularly preferred amounts disclosed by Dietterle of 10 to 100 g/l of tin (II) salts and 0.1 to 20 g/l of copper (II) salts are deemed small enough to read on Applicants' claimed salts ranges:

10 to 100 g/l of tin (II) salts (Dietterle, col. 4, lines 62-64) as compared to from **about 5 to about 195 g/l** of tin methanesulfonate (as recited in present claims 37/30); and

0.1 to 20 g/l of copper (II) salts (Dietterle, col. 5, lines 4-5) as compared to from **about 8 to about 280 g/l** of copper methanesulfonate (as recited in present claims 38/30).

The copper content in the tin-copper alloys can be adjusted by varying the

concentration ratios of the tin and copper salts in the electrolyte (Dietterle, col. 5, lines 52-60).

Thus, Dietterle's disclosure of a 0.1 to 99.9 wt% copper content would have been narrowed to provide a copper content greater than 60% when using the particularly preferred amounts.

As to II.A.4.b., the expressed teachings of 10 to 100 g/l of tin (II) salts and 0.1 to 20 g/l of copper (II) salts being particularly preferred amounts would have motivated the selection.

As to II.A.4.c., Dietterle's salt ranges overlap with Applicants' claimed salt ranges and are disclosed as particularly preferred amounts. Thus, Dietterle would have been a reference of a method showing the deposition of tin-copper alloys from a composition further comprising the required electrolyte components.

As to II.A.4.f., claims 30-34, 36-38 and 56-60 are directed to a method. Applicants seem to be focused on the **result** of the method, i.e., "to electrolytically deposit a bronze having a copper content of greater than about 60%", and not the **operational method steps**. The result of the method does not distinguish the method from the prior art because the result does not affect the operation of the method. However, when Dietterle teaches a similar method using a similar electrolyte

composition as presently claimed, the operation of the method as presently claimed would have been obvious to one having ordinary skill in the art.

Applicants state that the Office has articulated no reason as to why one skilled in the art would modify the specific teachings of Dietterle et al. and Tsuji et al. to formulate high Cu alloys.

In response,

(a) Dietterle teaches that the tin (II) salts are present in the electrolyte particularly preferred in an amount of **10 to 100 g/l** electrolyte, calculated as tin (II) [col. 4, lines 62-64]. Applicants claim that tin methanesulfonate is present in the electrolyte in an amount of from **about 5 to about 195 g/l** of electrolyte (present claims 37/30).

(b) Dietterle teaches that the copper (II) salts are present in the electrolyte particularly preferred in an amount of **0.1 to 20 g/l** electrolyte, calculated as copper (II) [col. 5, lines 4-6]. Applicants claim that copper methanesulfonate is present in the electrolyte in an amount of from **about 8 to about 280 g/l** of electrolyte (present claims 38/30).

The expressed teachings of 10 to 100 g/l of tin (II) salts and 0.1 to 20 g/l of copper (II) salts being particularly preferred amounts would have motivated the selection.

Thus, Dietterle's disclosure of a 0.1 to 99.9 wt% copper content would have been narrowed to provide a copper content greater than 60% when using the particularly

preferred amounts.

Applicants state that in the present situation, no reason to adapt the respective teachings of the cited references to high Cu alloys can fairly be advanced.

In response, claims 30-34, 36-38 and 56-60 are directed to a method. Applicants seem to be focused on the **result** of the method, i.e., "to electrolytically deposit a bronze having a copper content of greater than about 60%", and not the **operational method steps**. The result of the method does not distinguish the method from the prior art because the result does not affect the operation of the method. However, when Dietterle teaches a similar method using a similar electrolyte composition as presently claimed, the operation of the method as presently claimed would have been obvious to one having ordinary skill in the art.

Applicants state that the Office has failed to establish a prima facie case of obviousness based on the combination of the Dietterle et al. and Tsuji et al. references since the cited range relied on is so universally broad that it provides no basis for concluding that applicants' copper range is obvious and since no reason may be articulated to modify the methods of the prior art to deposit a copper-rich bronze.

In response, the particularly preferred amounts disclosed by Dietterle of 0.1 to 20 g/l of copper (II) salts is a copper range that provides basis for concluding that Applicants' copper range is obvious. The expressed teachings of 10 to 100 g/l of tin (II)

salts and 0.1 to 20 g/l of copper (II) salts being particularly preferred amounts would have motivated the selection.

Applicants state that these examples, in combination with additional disclosure elsewhere in both the Dietterle et al. and Tsuji et al. references, materially teach away methods for the deposition of copper rich bronzes.

In response,

(a) Dietterle teaches that the tin (II) salts are present in the electrolyte particularly preferred in an amount of **10 to 100 g/l** electrolyte, calculated as tin (II) [col. 4, lines 62-64]. Applicants claim that tin methanesulfonate is present in the electrolyte in an amount of from **about 5 to about 195 g/l** of electrolyte (present claims 37/30).

(b) Dietterle teaches that the copper (II) salts are present in the electrolyte particularly preferred in an amount of **0.1 to 20 g/l** electrolyte, calculated as copper (II) [col. 5, lines 4-6]. Applicants claim that copper methanesulfonate is present in the electrolyte in an amount of from **about 8 to about 280 g/l** of electrolyte (present claims 38/30).

The particularly preferred amounts disclosed by Dietterle would not be a teaching away from the method.

Electrolyte

II. Claims **40-50 and 61** have been rejected under 35 U.S.C. 103(a) as being

unpatentable over **WO 02/24979** ('979) and **Dietterle et al.** (US Patent No. 7,179,362 B2) in combination with **Tsuji et al.** (US Patent No. 6,607,653 B1).

The rejection of claims 40-50 and 61 under 35 U.S.C. 103(a) as being unpatentable over WO 02/24979 ('979) and Dietterle et al. in combination with Tsuji et al. is as applied in the Office Action dated July 5, 2007 and incorporated herein. The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

Furthermore, the claim limitation of "to deposit a bronze having a tin/copper ratio of about 40/60, about 20/80, or about 10/90", does not compositionally distinguish the electrolyte from the prior art, esp., when 10 to 100 g/l of tin (II) salts (Dietterle, col. 4, lines 62-64) and 0.1 to 20 g/l of copper (II) salts (Dietterle, col. 5, lines 4-6) would have been sufficient, unless shown otherwise.

III. Claim 51 has been rejected under 35 U.S.C. 103(a) as being unpatentable over **WO 02/24979** ('979) and **Dietterle et al.** (US Patent No. 7,179,362 B2) in combination with **Tsuji et al.** (US Patent No. 6,607,653 B1) as applied to claims 40-50 and 61 above, and further in view of **EP 1,001,054** ('054).

The rejection of claim 51 under 35 U.S.C. 103(a) as being unpatentable over WO 02/24979 ('979) and Dietterle et al. in combination with Tsuji et al. as applied to claims 40-50 and 61 above, and further in view of EP 1,001,054 ('054) is as applied in the

Office Action dated July 5, 2007 and incorporated herein. The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

IV. Claims **53-55 and 62** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **WO 02/24979** ('979) and **Dietterle et al.** (US Patent No. 7,179,362 B2) in combination with **Tsuji et al.** (US Patent No. 6,607,653 B1).

The rejection of claims 53-55 and 62 under 35 U.S.C. 103(a) as being unpatentable over WO 02/24979 ('979) and Dietterle et al. in combination with Tsuji et al. is as applied in the Office Action dated July 5, 2007 and incorporated herein. The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

Response to Amendment

Double Patenting

Claims **63-74** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-27 of copending Application No. **11/105,947** (Zschintzsch et al.). Although the conflicting claims are not identical, they are not patentably distinct from each other because the

Art Unit: 1795

subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows:

Claim 30 of the Instant Application

30. (Previously Presented) A method for electrolytic deposition of bronze onto a substrate, the method comprising:

(i) immersing the substrate in an aqueous acidic electrolyte having a pH less than about 1 and comprising:

- a) tin ions;
- b) copper ions;
- c) an alkylsulfonic acid;
- d) an aromatic, nonionic wetting agent; and
- e) an oxidation inhibitor;

wherein a ratio of tin ion concentration to copper ion concentration is sufficient to electrolytically deposit a bronze having a copper content of greater than about 60%; and

(ii) applying a current at a current density sufficient to electrolytically deposit bronze having the copper content greater than about 60% onto the substrate.

Claim 6 of the Copending Application

6. (Currently amended) A method for electrolytic deposition of bronze onto a substrate, the method comprising:

immersing a substrate in an aqueous acidic electrolyte containing:

- a) tin ions;
- b) copper ions in a concentration of at least 4 g/L;
- c) an alkylsulfonic acid;
- d) a nonionic wetting agent selected from the group consisting of aliphatic fatty alcohol ethoxylate nonionic wetting agents, an aromatic, non-ionic wetting agent, and a combination thereof; and
- e) a substituted dithioglycol brightener present in the composition in a concentration of less than 5 g/L;

wherein a ratio of tin ion concentration to copper ion concentration is sufficient to electrolytically deposit a bronze comprising at least about 60% by weight Cu; and electrodepositing onto said substrate bronze comprising at least about 60% by

weight Cu.

The independent claims of the instant application recite similar limitations, either alone or in combination with their dependent claims, as that of the claims of the copending application wherein the claims of the instant application are encompassed by the claims of the copending application. Therefore, the claims would have been obvious variants over each other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

Method

I. Claim **63** is rejected under 35 U.S.C. 103(a) as being unpatentable over **WO 02/24979** ('979) and **Dietterle et al.** (US Patent No. 7,179,362 B2) in combination with **Tsuji et al.** (US Patent No. 6,607,653 B1) as applied to claims 30-34, 36-38 and 56-60 above.

Dietterle and Tsuji are as applied above and incorporated herein.

The method of Dietterle differs from the instant invention because Dietterle does not disclose wherein the aqueous acidic electrolyte consists essentially of ..., as recited in claim 63.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the electrolyte described by Dietterle with wherein

the aqueous acidic electrolyte consists essentially of ... because for the purpose of searching for and applying prior art under 35 USC 102 and 103, absent a clear indication in the specification or claims of what the basic and novel characteristics actually are, "consisting essentially of" will be construed as equivalent to "comprising". *PPG, 156 F.3d at 1355, 48 USPQ2d at 1355*. If an Applicant contends that additional steps or materials in the prior art are excluded by the recitation of "consisting essentially of," Applicant has the burden of showing that the introduction of additional steps or components would materially change the characteristics of Applicants' invention (MPEP § 2111.03).

II. Claims **64-67** are rejected under 35 U.S.C. 103(a) as being unpatentable over **WO 02/24979** ('979) and **Dietterle et al.** (US Patent No. 7,179,362 B2) in combination with **Tsuji et al.** (US Patent No. 6,607,653 B1) as applied to claims 30-34, 36-38 and 56-60 above, and further in view of **EP 1,091,023** ('023).

Dietterle and Tsuji are as applied above and incorporated herein.

Dietterle teaches that the electrolyte can furthermore contain different additions which are commonly used in acid electrolytes for depositing tin alloys, e.g., grain refining additions, surface-active agents, and/or brightening agents (col. 5, lines 18-21).

Tsuji teaches a source of alloying ion selected from the group consisting of zinc ions, bismuth ions, and a combination thereof (= bismuth) [col. 8, line 14 to col. 9, line 3].

EP '023 teaches that suitable other alloy materials that may be used include, but are not limited to: zinc, bismuth, indium or antimony. Such other alloying materials may be used to slightly modify the melting range of the tin-copper alloy (col. 8, lines 5-16).

The method of Dietterle differs from the instant invention because Dietterle does not disclose the following:

- a. Wherein the aqueous acidic electrolyte consists of ..., as recited in claim
64.
- b. Wherein the aqueous acidic electrolyte consists of ..., as recited in claim
65.
- c. Wherein the aqueous acidic electrolyte consists of ..., as recited in claim
66.
- d. Wherein the aqueous acidic electrolyte consists of ..., as recited in claim
67.

Like Dietterle, EP '023 teaches electrodepositing tin-copper alloys. EP '023 teaches that the electrolyte including **a basis solution** of 5 to 100 g/l tin, 0.01 to 10 g/l copper, one or more acidic electrolytes, and **optionally one or more additives**, wherein the basis solution is substantially free of lead (col. 7, lines 21-25; and col. 7, line 57 to col. 8, line 4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the electrolyte described by Dietterle with (a) to

Art Unit: 1795

(d) above because a skilled artisan in looking to develop a bath for use at an acidic pH would look at the additives in the prior art for their functioning in an electroplating tin-copper alloy bath and would have determined which additives to have added depending on their functioning as taught by Dietterle (col. 5, lines 18-21) and EP '023 (col. 7, lines 21-25; and col. 7, line 57 to col. 8, line 4).

Electrolyte

III. Claim 68 is rejected under 35 U.S.C. 103(a) as being unpatentable over **WO 02/24979** ('979) and **Dietterle et al.** (US Patent No. 7,179,362 B2) in combination with **Tsuji et al.** (US Patent No. 6,607,653 B1) as applied to claims 40-50 and 61 above.

Dietterle and Tsuji are as applied above and incorporated herein.

The electrolyte of Dietterle differs from the instant invention because Dietterle does not disclose wherein the aqueous acidic electrolyte consists essentially of ..., as recited in claim 68.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the electrolyte described by Dietterle with wherein the aqueous acidic electrolyte consists essentially of ... because for the purpose of searching for and applying prior art under 35 USC 102 and 103, absent a clear indication in the specification or claims of what the basic and novel characteristics actually are, "consisting essentially of" will be construed as equivalent to "comprising". *PPG, 156 F.3d at 1355, 48 USPQ2d at 1355*. If an Applicant contends that additional

steps or materials in the prior art are excluded by the recitation of "consisting essentially of," Applicant has the burden of showing that the introduction of additional steps or components would materially change the characteristics of Applicants' invention (MPEP § 2111.03).

IV. Claims **69-72** are rejected under 35 U.S.C. 103(a) as being unpatentable over **WO 02/24979** ('979) and **Dietterle et al.** (US Patent No. 7,179,362 B2) in combination with **Tsuji et al.** (US Patent No. 6,607,653 B1) as applied to claims 40-50 and 61 above, and further in view of **EP 1,091,023** ('023).

Dietterle and Tsuji are as applied above and incorporated herein.

Dietterle teaches that the electrolyte can furthermore contain different additions which are commonly used in acid electrolytes for depositing tin alloys, e.g., grain refining additions, surface-active agents, and/or brightening agents (col. 5, lines 18-21).

Tsuji teaches a source of alloying ion selected from the group consisting of zinc ions, bismuth ions, and a combination thereof (= bismuth) [col. 8, line 14 to col. 9, line 3].

EP '023 teaches that suitable other alloy materials that may be used include, but are not limited to: zinc, bismuth, indium or antimony. Such other alloying materials may be used to slightly modify the melting range of the tin-copper alloy (col. 8, lines 5-16).

The electrolyte of Dietterle differs from the instant invention because Dietterle does not disclose the following:

a. Wherein the aqueous acidic electrolyte consists of ..., as recited in claim
69.

b. Wherein the aqueous acidic electrolyte consists of ..., as recited in claim
70.

c. Wherein the aqueous acidic electrolyte consists of ..., as recited in claim
71.

d. Wherein the aqueous acidic electrolyte consists of ..., as recited in claim
72.

Like Dietterle, EP '023 teaches electrodepositing tin-copper alloys. EP '023 teaches that the electrolyte including **a basis solution** of 5 to 100 g/l tin, 0.01 to 10 g/l copper, one or more acidic electrolytes, and **optionally one or more additives**, wherein the basis solution is substantially free of lead (col. 7, lines 21-25; and col. 7, line 57 to col. 8, line 4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the electrolyte described by Dietterle with (a) to (d) above because a skilled artisan in looking to develop a bath for use at an acidic pH would look at the additives in the prior art for their functioning in an electroplating tin-copper alloy bath and would have determined which additives to have added depending on their functioning as taught by Dietterle (col. 5, lines 18-21) and EP '023 (col. 7, lines 21-25; and col. 7, line 57 to col. 8, line 4).

V. Claim 73 is rejected under 35 U.S.C. 103(a) as being unpatentable over **WO 02/24979** ('979) and **Dietterle et al.** (US Patent No. 7,179,362 B2) in combination with **Tsuji et al.** (US Patent No. 6,607,653 B1) as applied to claims 53-55 and 62 above.

Dietterle and Tsuji are as applied above and incorporated herein.

The electrolyte of Dietterle differs from the instant invention because Dietterle does not disclose wherein the aqueous acidic electrolyte consists essentially of ..., as recited in claim 73.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the electrolyte described by Dietterle with wherein the aqueous acidic electrolyte consists essentially of ... because for the purpose of searching for and applying prior art under 35 USC 102 and 103, absent a clear indication in the specification or claims of what the basic and novel characteristics actually are, "consisting essentially of" will be construed as equivalent to "comprising". *PPG, 156 F.3d at 1355, 48 USPQ2d at 1355*. If an Applicant contends that additional steps or materials in the prior art are excluded by the recitation of "consisting essentially of," Applicant has the burden of showing that the introduction of additional steps or components would materially change the characteristics of Applicants' invention (MPEP § 2111.03).

VI. Claim 74 is rejected under 35 U.S.C. 103(a) as being unpatentable over **WO 02/24979** ('979) and **Dietterle et al.** (US Patent No. 7,179,362 B2) in combination with

Tsuji et al. (US Patent No. 6,607,653 B1) as applied to claims 53-55 and 62 above.

Dietterle and Tsuji are as applied above and incorporated herein.

Dietterle teaches that the electrolyte can furthermore contain different additions which are commonly used in acid electrolytes for depositing tin alloys, e.g., grain refining additions, surface-active agents, and/or brightening agents (col. 5, lines 18-21).

The electrolyte of Dietterle differs from the instant invention because Dietterle does not disclose wherein the aqueous acidic electrolyte consists of ..., as recited in claim 74.

Like Dietterle, EP '023 teaches electrodepositing tin-copper alloys. EP '023 teaches that the electrolyte including *a basis solution* of 5 to 100 g/l tin, 0.01 to 10 g/l copper, one or more acidic electrolytes, and *optionally one or more additives*, wherein the basis solution is substantially free of lead (col. 7, lines 21-25; and col. 7, line 57 to col. 8, line 4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the electrolyte described by Dietterle with wherein the aqueous acidic electrolyte consists of ..., as recited in claim 74 because a skilled artisan in looking to develop a bath for use at an acidic pH would look at the additives in the prior art for their functioning in an electroplating tin-copper alloy bath and would have determined which additives to have added depending on their functioning as taught by Dietterle (col. 5, lines 18-21) and EP '023 (col. 7, lines 21-25; and col. 7, line 57 to col. 8, line 4).

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

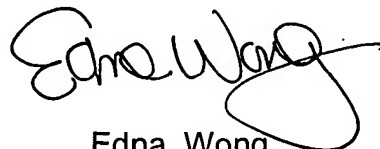
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Art Unit: 1795

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A handwritten signature in black ink, appearing to read "Edna Wong", with a large, stylized loop at the end.

Edna Wong
Primary Examiner
Art Unit 1795

EW
December 23, 2007